

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 14.67 cfs

Maximum Flow: 16.47 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 41

Headwater Elevation (ft)	Total Discharge (cfs)	Lt. Sta. 692+80 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
405.82	0.00	0.00	0.00	1
406.06	1.65	1.65	0.00	1
406.21	3.29	3.29	0.00	1
406.33	4.94	4.94	0.00	1
406.44	6.59	6.59	0.00	1
406.54	8.23	8.23	0.00	1
406.63	9.88	9.88	0.00	1
406.72	11.53	11.53	0.00	1
406.80	13.18	13.18	0.00	1
406.87	14.67	14.67	0.00	1
406.96	16.47	16.47	0.00	1
427.00	350.24	350.24	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 41

Total Rating Curve

Crossing: Crossing 41

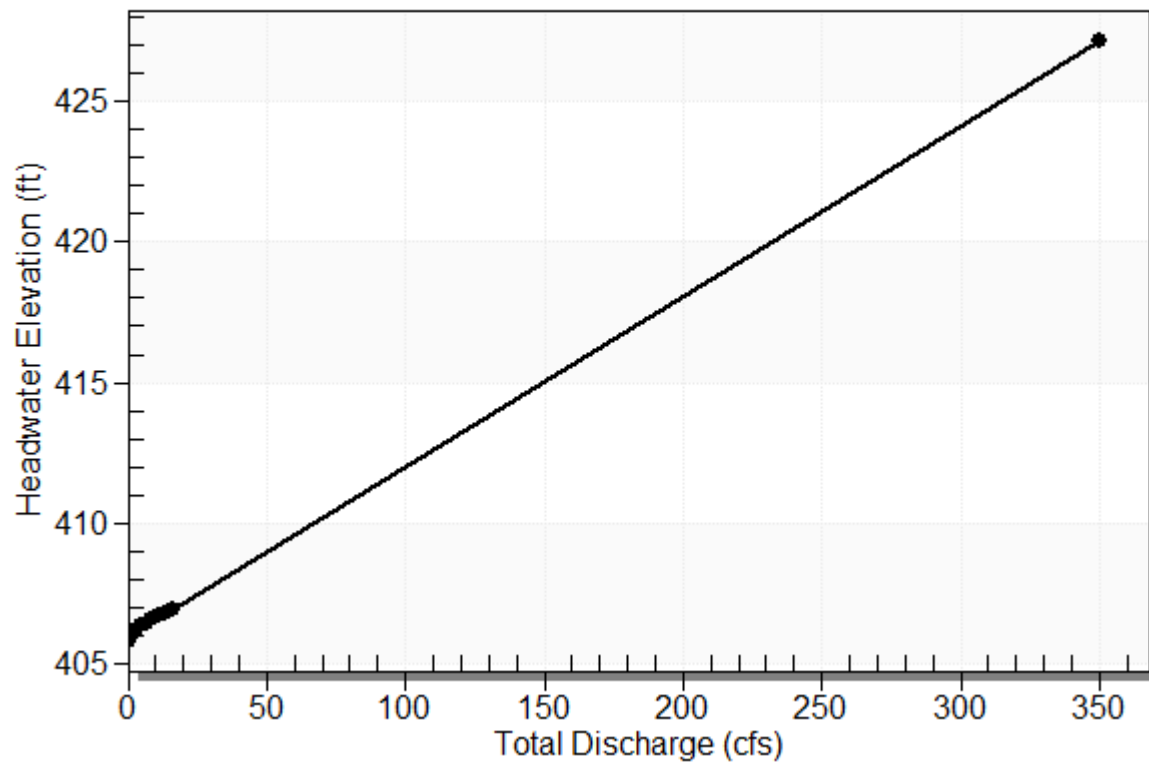


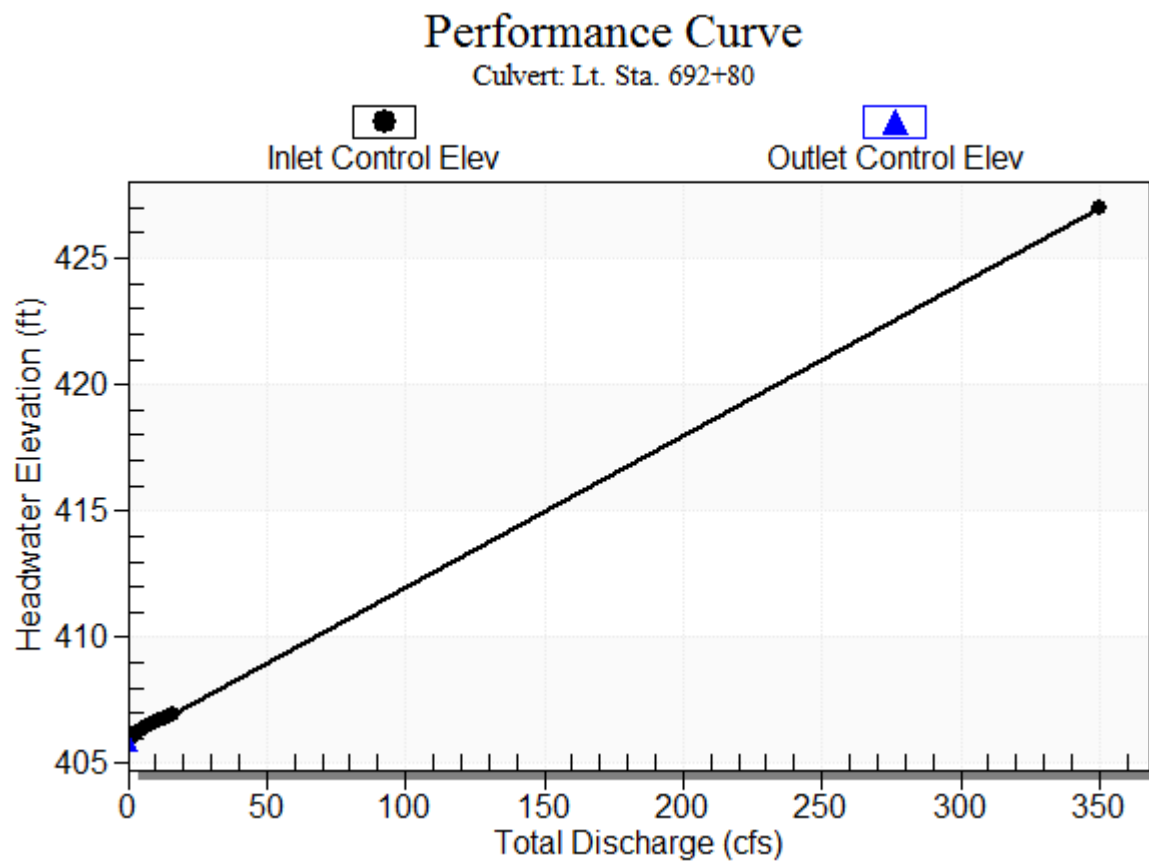
Table 2 - Culvert Summary Table: Lt. Sta. 692+80

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	405.82	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1.65	1.65	406.06	0.245	0.0*	1-S2n	0.024	0.174	0.024	0.094	17.473	2.111
3.29	3.29	406.21	0.389	0.0*	1-S2n	0.047	0.276	0.047	0.142	17.473	2.745
4.94	4.94	406.33	0.509	0.0*	1-S2n	0.071	0.362	0.071	0.181	17.473	3.194
6.59	6.59	406.44	0.617	0.0*	1-S2n	0.094	0.438	0.094	0.215	17.473	3.551
8.23	8.23	406.54	0.716	0.0*	1-S2n	0.118	0.509	0.118	0.245	17.473	3.850
9.88	9.88	406.63	0.808	0.0*	1-S2n	0.141	0.574	0.141	0.272	17.473	4.113
11.53	11.53	406.72	0.896	0.0*	1-S2n	0.165	0.637	0.165	0.298	17.473	4.344
13.18	13.18	406.80	0.979	0.0*	1-S2n	0.189	0.696	0.189	0.323	17.473	4.555
14.67	14.67	406.87	1.052	0.0*	1-S2n	0.210	0.748	0.210	0.343	17.473	4.731
16.47	16.47	406.96	1.136	0.0*	1-S2n	0.236	0.807	0.292	0.367	14.080	4.924

* Full Flow Headwater elevation is below inlet invert.

Straight Culvert
Inlet Elevation (invert): 405.82 ft, Outlet Elevation (invert): 381.50 ft
Culvert Length: 255.94 ft, Culvert Slope: 0.0955

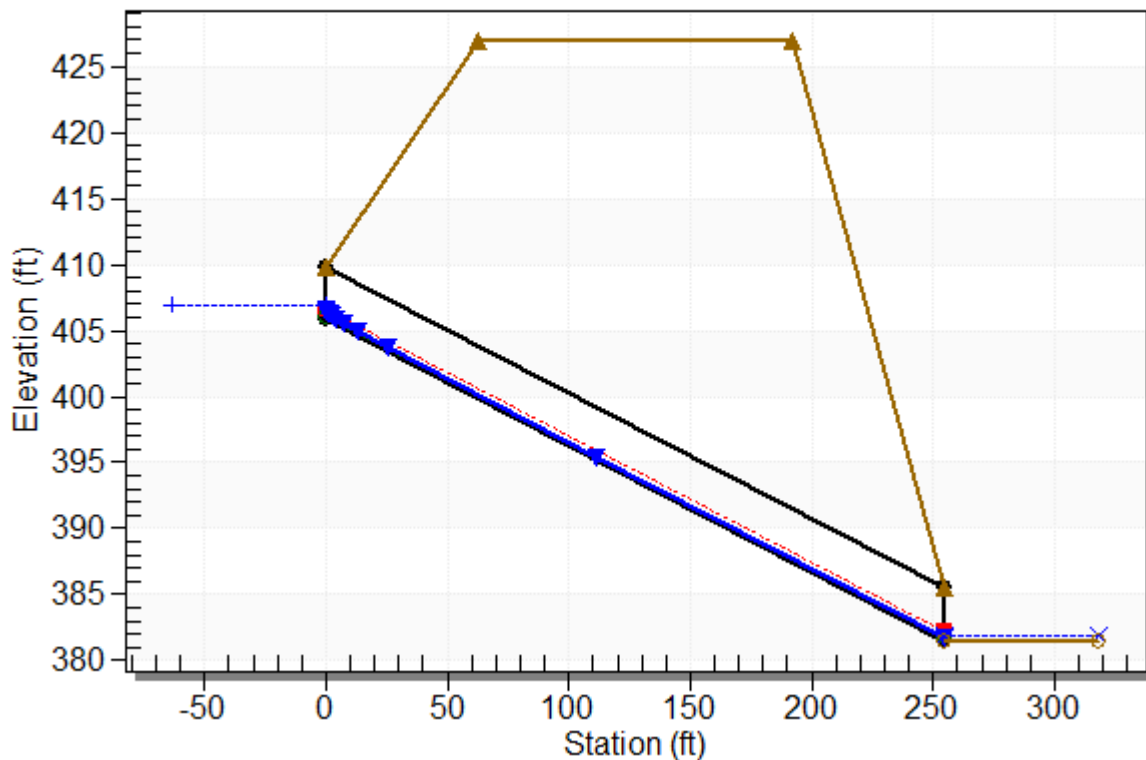
Culvert Performance Curve Plot: Lt. Sta. 692+80



Water Surface Profile Plot for Culvert: Lt. Sta. 692+80

Crossing - Crossing 41, Design Discharge - 14.7 cfs

Culvert - Lt. Sta. 692+80, Culvert Discharge - 14.7 cfs



Site Data - Lt. Sta. 692+80

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 405.82 ft

Outlet Station: 254.78 ft

Outlet Elevation: 381.50 ft

Number of Barrels: 1

Culvert Data Summary - Lt. Sta. 692+80

Barrel Shape: Concrete Box

Barrel Span: 4.00 ft

Barrel Rise: 4.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (30-75° flare) Wingwall

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 41)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	381.50	0.00	0.00	0.00	0.00
1.65	381.59	0.09	2.11	0.59	1.23
3.29	381.64	0.14	2.74	0.89	1.31
4.94	381.68	0.18	3.19	1.13	1.36
6.59	381.71	0.21	3.55	1.34	1.40
8.23	381.74	0.24	3.85	1.53	1.43
9.88	381.77	0.27	4.11	1.70	1.45
11.53	381.80	0.30	4.34	1.86	1.47
13.18	381.82	0.32	4.55	2.01	1.49
14.67	381.84	0.34	4.73	2.14	1.50
16.47	381.87	0.37	4.92	2.29	1.52

Tailwater Channel Data - Crossing 41

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 8.00 ft

Side Slope (H:V): 3.00 (1:1)

Channel Slope: 0.1000

Channel Manning's n: 0.0450

Channel Invert Elevation: 381.50 ft

Roadway Data for Crossing: Crossing 41

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 427.00 ft

Roadway Surface: Paved

Roadway Top Width: 130.00 ft